We claim:

CLAIMS

1. An immunoadhesin comprising a chimeric Anthrax Toxin Receptor protein, said Anthrax Toxin Receptor protein comprising:

an Anthrax Toxin Receptor protein linked to at least a portion of an immunoglobulin heavy chain; and

J chain and secretory component associated with said chimeric Anthrax Toxin Receptor protein.

2. The immunoadhesin of claim 1 wherein said Anthrax Toxin Receptor protein is comprised of

the extracellular domain of Anthrax Toxin Receptor or any portion thereof.

3. The immunoadhesin of claim 1 wherein said immunoglobulin heavy chain is selected from the goup of

IgA, IgA1, IgA2, IgM, and chimeric immunoglobulin heavy chains.

4. The immunoadhesin of claim 1 comprising at least one additional chimeric Anthrax Toxin Receptor protein.

5. The immunoadhesin of claim 1 wherein said Anthrax Toxin Receptor protein is comprised of any portion of the extracellular domain of Anthrax Toxin Receptor protein; and said immunoglobulin heavy chain comprises at least a portion of an IgA2 heavy chain.

6. The immunoadhesin of claim 1 expressed in transgenic plants.

7. The immunoadhesin of claim 1 expressed in monocotyledonous plants.

8. The immunoadhesin of claim 1 expressed in dicotyledonous plants.

9. The immunoadhesin of claim 1 wherein all proteins are human.

10. The immunoadhesin of claim 1 expressed in heterologous cells derived from plants vertebrates, or invertebrates.

11. The immunoadhesin of claim 1 expressed in mammalian cells.

12. The immunoadhesin of claim 1 expressed in hairy root cultures

13. The immunoadhesin of claim 1 expressed in plant cells in tissue culture.

14. An immunoadhesin comprising a chimeric Anthrax Toxin Receptor protein, said Anthrax Toxin Receptor protein comprising: an Anthrax Toxin Receptor protein linked to at least a portion of an immunoglobulin heavy chain, wherein said immunoadhesin has plant-specific glycosylation.

15. The immunoadhesin of claim 14 wherein said immunoadhesin further comprises a J chain and secretory component associated with said chimeric Anthrax Toxin Receptor protein.

16. The immunoadhesin of claim 14 wherein said Anthrax Toxin Receptor protein is comprised of the extracellular domain of Anthrax Toxin Receptor or any portion thereof.

17. The immunoadhesin of cliam 14 wherein said immunoglobulin heavy chain is selected from the goup of IgA, IgA_1, IgA_2, IgG_1, IgG_2, IgG_3, IgG_4, IgD, IgE, IgM, and a chimeric immunoglobulin heavy chain.

18. The immunoadhesin of claim 14 comprising at least one additional chimeric Anthrax Toxin Receptor protein.

19. The immunoadhesin of claim 14 wherein said Anthrax Toxin Receptor protein is comprised of any portion of the extracellular domain of Anthrax Toxin Receptor protein; and said immunoglobulin heavy chain comprises at least a portion of an IgA2 heavy chain.

20. The immunoadhesin of claim 14 wherein all proteins are human.

21. The immunoadhesin of claim 14 expressed in heterologous cells derived from plants vertebrates, or invertebrates.

22. The immunoadhesin of claim 14 expressed in hairy root cultures

23. The immunoadhesin of claim 14 expressed in plant cells in tissue culture.

24. The immunoadhesin of claim 14 expressed in transgenic plants.

25. The immunoadhesin of claim 14 expressed in monocotyledonous plants.

26. The immunoadhesin of claim 14 expressed in dicotyledonous plants.

27. A composition comprising an immunoadhesin and plant material, wherein said immunoadhesin comprises a chimeric Anthrax Toxin Receptor protein, said chimeric Anthrax Toxin Receptor protein linked to at least a portion of an immunoglobulin heavy chain.

28. The composition of claim 27 further comprising a J chain and secretory component with said chimeric Anthrax Toxin Receptor protein.

29. A composition of claim 27 wherein said chimeric Anthrax Toxin Receptor protein is comprised of any portion of the extracellular domain of Anthrax Toxin Receptor protein; and said immunoadhesin has plant-specific glycosylation.

30. A composition of claim 27 wherein said immunoglobulin heavy chain is selected from the goup of IgA, IgA_1, IgA_2, IgG_1, IgG_2, IgG_3, IgG_4, IgD, IgE, IgM, and a chimeric immunoglobulin heavy chain.

31. A composition of claim 27 comprising at least one additional chimeric Anthrax Toxin Receptor protein.

32. A composition of claim 27 wherein said Anthrax Toxin Receptor protein is comprised of any portion of the extracellular domain of Anthrax Toxin Receptor protein; and said immunoglobulin heavy chain comprises at least a portion of an IgA2 heavy chain.

33. A method for reducing the binding of protective antigen (PA) of *Bacillus anthracis* to host cells susceptible to damage by anthrax toxin, said method comprising: contacting PA with an immunoadhesin of claim 1, 14 or 27, and wherein said immunoadhesin binds to PA and reduces the toxic activity thereof.

34. A method for reducing mortality and morbidity due to anthrax toxin, said method comprising: contacting PA with an immunoadhesin of claim 1, 14 or 27, and wherein said immunoadhesin binds to PA and reduces the toxic activity thereof.

35. A method for reducing mortality and morbidity due to anthrax toxin in a human subject, said method comprising: administering to said subject an effective amount of an immunoadhesin of claim 1, 14 or 27, and wherein said immunoadhesin binds to PA and reduces the toxic activity thereof.

36. A pharmaecutical composition comprising an immunoadhesin of claim 1, 14 or 27 in a pharmaceutically acceptable buffer.

37. An expression vector comprising a gene encoding a chimeric anthrax toxin receptor protein operatively linked to a plant promoter, said chimeric anthrax toxin receptor protein linked to at least a portion of an immunoglobulin heavy chain.